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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/537,032

11/14/2005

Frank Miller

10191/3696

1223

26646

7590

10/10/2008

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EXAMINER

GORMAN, DARREN W

ART UNIT

PAPER NUMBER

3752

MAIL DATE

DELIVERY MODE

10/10/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/537,032	<b>Applicant(s)</b> MILLER, FRANK	
	<b>Examiner</b> Darren W. Gorman	<b>Art Unit</b> 3752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 August 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 14-17 and 19-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 14-17 and 19-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 May 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “metering chamber” into which the spray discharge opening of the nozzle body opens, as recited in claim 14, and the metering conduit having “in an axial extent at least one reduced-wall thickness region”, as recited in claim 26, must be shown or the features canceled from the claims. No new matter should be entered. It should be noted that the above objections to the drawings are repeated from the office action mailed May 23, 2008, since these issues were not adequately addressed in the response filed August 11, 2008. Specifically, Applicant neither traversed nor took any action to correct the deficiency regarding the “metering chamber”. Further, Applicant stated that the recited features of claim 26 do not need to be shown in the drawings since they are not necessary for the understanding of the subject matter sought to be patented. However, the feature specified in claim 26 is a “feature specified in the claims”, which must be shown or cancelled from the claims, as per 37 CFR 1.83(a). Further, it is not clear to the Examiner as to how such a feature would appear with the device shown, since it could be embodied in a number of different ways. Thus, understanding of this particular subject matter is necessary. If the feature is “not sought to be patented” then it is unclear to the Examiner why such a feature is specified in the claims.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet,

Art Unit: 3752

even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 27 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

As now presented, claim 27 is combined with the features added to claim 14 (from original claim 18), which includes the recitation, “wherein the heating element delivers heat at least to a part of at least one of the metering conduit, the adapter, the metering device, and the

Art Unit: 3752

nozzle body”. As per the originally filed disclosure, delivery of heat from the heating element to the metering conduit, the adapter, the metering device, or the nozzle body, occurs when the heating element is disposed at least one of: i) in the nozzle body, ii) in the metering conduit, iii) in the adapter, and iv) in or on the metering device (see also, alternatively recited claim 28). The species shown in Figure 5 is the only disclosed species where the heating element is disposed after the spray discharge opening, as recited in claim 27. Clearly, in this particular species, the heating element is not disposed in the nozzle body, in the metering conduit, in the adapter, or in or on the metering device, thus the feature recited in claim 27 is mutually exclusive of the features that are now added to claim 14 with the amendment filed August 11, 2008, and thus the device recited in claim 27 contains subject matter which was not described in the originally filed disclosure.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 14-17, 19-24, 26 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Krohn et al., USPN 5,947,091.

Claims 21-23 were not rejected under U.S.C. 102(b) as being anticipated by Krohn in the office action mailed May 23, 2008, thus this ground of rejection regarding claims 21-23 under U.S.C. 102(b) is hereby recognized by the Examiner as a new ground of rejection. However, the

Art Unit: 3752

Examiner had set forth a reasonable ground of rejection for claims 21-23 in the aforementioned office action under 35 U.S.C. 103(a) as being unpatentable over Grieve et al. (US Patent Application Publication No. 2002/0108309). As a result of the amendments to the claims per the response filed August 11, 2008, the prior art rejection of Grieve no longer reasonably applies, and thus the rejection of claims 21-23 under 35 U.S.C. 103(a) as being unpatentable over Grieve cannot be maintained by the Examiner. Therefore, the rejection of claims 21-23, set forth below, U.S.C. 102(b) is necessitated by Applicant's amendment.

Krohn (see Figure 1) shows at least one metering device comprising a fuel injection valve (10), which meters fuel into a metering conduit (22); a nozzle body (33, 34, 35) adjoining the metering conduit, the nozzle body having at least one spray discharge opening (opened and closed by valve head member 32) which opens into a metering chamber (60); and at least one electrically operated heating element (23-Figure 1, or 23'-Figure 2, or 23''-Figure 3, and 43) with which heat can be delivered to the fuel, including at least one of a wire braid networked in mesh fashion, and a tubular hollow element. Krohn also shows an adapter (50) which joins the metering conduit and metering device in a hydraulically sealed and detachable fashion, the adapter including an air inlet (52; see column 4, lines 55-57) connected in the adapter to the metering conduit (via orifices 54). Krohn also shows at least one embodiment (see Figure 3) wherein at least one (centrally located heating element 23'') of the at least one heating element is immobilized using an attachment element (ceramic material in surrounding relation to centrally located heating element 23'') made of one of plastic, dip resin, or ceramic, and wherein at least one of the heating element and the attachment element is at least partially surrounded by ceramic (ceramic material in surrounding relation to the outer, concentrically located heating element

Art Unit: 3752

23’’). Also, Krohn discloses a controller which regulates heat output to the heating element (see column 3, line 66, through column 4, line 8). Further, Krohn discloses that the heat output of the heating element is controlled based on temperature signals (i.e. operating parameters), which would be at least indirectly related to a temperature in the metering chamber (see again column 3, line 66, through column 4, line 8). Krohn further shows at least a portion of the metering conduit as having varying wall thickness, thus there is at least one “reduced” wall-thickness region. As to the preamble recitation, “for input into a chemical reformer in order to recover hydrogen or into a post-combustion device in order to generate heat”, such recitations are not given patentable weight because it has been held that a preamble is denied the effect of a limitation where the claim is drawn to a structure and the portion of the claim following the preamble is a self-contained description of the structure not depending for completeness upon the introductory clause. *Kropa v. Robie*, 88 USPQ 478 (CCPA 1951).

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Krohn et al.

Krohn shows all of the elements recited in claim 24, however Krohn is silent as to a specific fuel pressure operating range of the fuel injection valve. It should be noted that the opening pressure of the outlet valve (30) for the spray discharge orifice of Krohn is expressly

Art Unit: 3752

disclosed as being between 2000-4000hPa (i.e. 2-4 bar: see column 4, lines 40-42). Thus, even though the fuel pressure operating range of fuel injection valve (10) is not expressly disclosed by Krohn, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a fuel injection valve that operates at fuel pressures below 10 bar, for the fuel injection valve of Krohn, since fuel injection valve operating pressures of above 10 bar in the device shown by Krohn would likely prematurely open the outlet valve without properly vaporizing the fuel as intended, and since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233 (CCPA 1955).

### ***Response to Arguments***

8. Applicant's arguments, see page 8 of the "Remarks" section of the response filed August 11, 2008, have been fully considered but they are not persuasive.

Applicant argues that the prior art reference to Krohn does not disclose or even suggest a heating element that delivers heat at least to a part of at least one of a metering conduit, an adapter, a metering device, and a nozzle body. Applicant further states, "the heating elements of Krohn, as shown in Figures 1 to 3, are not located in any position to deliver heat to these features. Nor does the specification disclose, or suggest, such heat delivery." Applicant's attention is directed to, for example, column 5, lines 35-38 of Krohn, which expressly states, "Depending on the shape of the injected fuel stream, some of the liquid fuel may also strike the inside surface of receptacle sleeve 22, where it is also evaporated if receptacle sleeve is hot enough." Taken in context with the disclosure of Krohn it is clear that heat from at least one of



Art Unit: 3752

the disclosed heating elements delivers heat at least to a part of, for example, at least the metering conduit (22). Further, based on the proximity of the heating elements of Krohn to the metering conduit, adapter, metering device and nozzle body (as applied by the Examiner), which, in some cases, the heating elements are in direct contact with these other elements, it is reasonable to expect at least some heat to be delivered to at least a part of each of these elements, regardless of whether or not Krohn expressly discloses such thermal energy transfer.

### *Conclusion*

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Darren W. Gorman whose telephone number is 571-272-4901. The examiner can normally be reached on M-F 7:30-5:00.

Art Unit: 3752

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Len Tran can be reached on 571-272-1184. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Darren W Gorman/  
Primary Examiner, Art Unit 3752

/D. W. G./  
Primary Examiner, Art Unit 3752